Do private asset funds generate alpha?

(or just track the market for private assets)

A Private Market Equivalent (PtME)

February 2025

Executive Summary

This report shows that investors in private market funds (private equity or infrastructure) can easily benchmark the performance of private fund managers, as they would any active equity manager, if they use a Private Market Equivalent (PtME): a combination of private market benchmarks, the relevant fund cash flows and net asset value, and a well-established methodology known as Direct Alpha.

For many investors, the default choice has long been to see fund performance through a combination of peer group benchmarks and public market equivalent (PME). But these approaches keep investors in the dark, unaware of private market movements and risk because they use metrics that are both inadequate and weak. Peer group data are inadequate because they do not represent the private asset market, but an aggregate of active managers, and weak because they are neither robust nor representative. As for public proxies, when it comes to selecting or evaluating managers, they refer to the wrong market and the wrong risks.

Using a private market equivalent (PtME) however, completely changes the perspective: simply using the private2000 or infra300 indices along with reported fund cash flows and NAV, allows fund-level alpha calculation reflecting the private assets market, and fund manager allocation choices and skills.

Key Insights:

- **Zero Alpha on average**: When benchmarked against the correct private market index, buyout and infrastructure funds exhibit zero alpha *on average*. Private market risk is the primary driver of returns in private asset funds. Of course, there is a significant dispersion of private fund alpha from very high to very negative.
- **Asset Allocation Alpha is positive**: splitting fund alpha between an asset allocation (sector bet) effect and pure alpha, buyout funds exhibit an average Asset Allocation Alpha of 3.92%, and infrastructure funds 6.7%. This shows that on average, fund managers create value by taking contrarian bets on specific sectors.
- **Negative Pure Net Alpha**: after fees, the remaining Pure Alpha is negative on average, at -4.04% for buyout funds and -5.97% for infrastructure. This in part driven by fees and in part because the average manager is either not that skilled or rather unlucky.
- **These findings are normal:** it should not be surprising that when using the correct market index i.e. a weighted average, about half the population is found to be under the average! These findings are also very close to well-established research results about active equity managers in public markets. Private equities are just another equity market, albeit with different dynamics, buyers and sellers than public equities.
- **Rank funds and managers:** with the right index and your own fund cash flow data, implementing a PtME using the Direct Alpha methodology is straightforward using the privateMetrics Excel plugin. From there, ranking funds by Alpha generation capacity is available to any LP.

The Illusion of Peer Group Benchmarks

Most LPs want to work with 'top quartile' managers i.e., the top 25% of fund managers by past performance. To do this, they obverse the historical track record of fund managers. These peer group benchmarks reflect the performance of the private asset market as well as that of each fund manager, but the two cannot be disentangled. In effect, these LPs are like the people in Plato's cave: they see reflections (fund performance track records) that are but shadows of the real world (the market for private assets and managers choices).

Let's say these LPs commit to investing in new funds specialising in Tech/AI, or Renewable Energy. Over the past decade, both sectors have seen a very significant increase in demand from equity investors, both public and private. AI and renewable energy are mega-trends, and successful companies in these sectors are likely to be extremely valuable soon. Every market participant knows this and wants a piece of that action. With higher demand, asset prices increase. All markets work like this, public or private.

For investors looking at the shadows on the wall of the cave, things are looking good. The managers of the funds they are looking at achieved high exit multiples. But why? Are exit multiples higher because the managers of these funds transformed good companies into exceptional ones? Or because everyone else is piling into the AI and renewables sectors, including the fund managers they can observe, the ones they cannot and many other types of investors (and lenders)?

This raises questions: are the managers that investors can observe representative of the performance of the market? If not, what does the "top quartile" really represent? Is it possible to outperform the peer group while underperforming the market? How can investors distinguish between the impact of the market and that of individual managers on fund performance?

Moreover, while they can see that some managers have been in the top quartile of their peer group until now, investors cannot be sure that this will persist tomorrow. If high performance was achieved through skill, then their top quartile status may persist (unless they just got lucky). But if they are top quartile because a market segment performed very well, such performance may not repeat in the future, as markets do not always go up.

The investors in the cave reply that the relevant peer-group must represent the same market segment as the fund's. But when they try to assess (for example) GI Partners Fund IV, a $2bn US Tech Buyout fund of the 2013 vintage with a 15.6% IRR and try to build a peer group reflecting the fund's characteristics: vintage year, strategy, geography and size, using their Pitchbook subscription, they quickly face the limits of peer grouping in private markets.

TABLE 1: IRR QUARTILE RANKINGS FOR GI PARTNERS FUND IV. SOURCE: PITCHBOOK.

Peer Group	Q1	Q2	Q3	Number of Funds	Quartile Ranking
US PE Buyout Tech Funds, vintage 2013 > $1bn	15.3%	14.1%	10.1%	6	1
Global PE Tech Funds, vintage 2013	29.5%	15.6%	10.7%	36	3
US PE Funds, vintage 2013	23.5%	15.1%	10.1%	89	2

Table 1 shows the data available to these investors: a peer group strictly matching their criteria—US-based buyout funds from the 2013 vintage, larger than $1 billion, and focused on the technology sector—comprises six funds. In this narrowly defined peer group, GI Partners Fund IV ranks in the top quartile! But does the track record of six funds really represent the entire opportunity set? Unlikely. They decide to include a broader set of funds by gradually removing some criteria and including a larger universe of buyout funds. This increases the sample size to 89 but at the expense of relevance. What is more, as the sample becomes less representative of the fund's unique strategy and characteristics, the quartile rank of GI Partners Fund IV drops from top quartile to less than remarkable. What should they do?

The illusion from which the "cave investors" suffer is two-fold:

- **Manager benchmarks are *not the market***: benchmarks built from fund manager data conflate the performance of the market and that of fund managers and do not provide investors with a clear representation of private market price dynamics, independently of what individual fund managers choose to do. As a result, LPs cannot be sure what such benchmarks mean in terms of the performance drivers of the funds they select and invest in. Given the limited data available to build peer groups in the first place, is a fund manager top quartile because they are highly skilled and deserve their fees or because they invested in the same sector that everyone else did and market prices increased (or because the Fed lowered interest rates)?

- **Peer group data is *almost never robust***. This is an endemic issue for investors in private markets: at the global level, there are millions of private companies they could invest in (1M+ in the privateMetrics universe) but c.5,000 buyout funds are invested in a much smaller subset of c.50,000 portfolio companies. Globally, the number of buyout transactions is c.4,000 to c.6,000 annually. At the fund or deal level, taking strategy, geography, size and other factors into account, the likelihood of a representative peer group benchmark that also includes enough data to be robust is very low. Because of data limitation, *peer group benchmarks almost never provide investors with a good representation of fund performance*.

In the end, which peer group will the investors in the cave decide this fund belongs to? Investors using peer group benchmarks built from historical data cannot know for sure and will probably end up re-upping with the same manager because they have a good relationship or a good brand, but not on the basis of a concrete benchmark.

Data

To better understand the difference between fund peer groups and market benchmarks, we look at a large sample of private asset funds covering two private asset classes:[1]

- **824 buyout funds** with a combined Assets under Management (AuM) of $2tn from 2011 to 2023. Figure A2 in the appendix for their distribution by region, sector, and vintage year. North American funds dominate this dataset, accounting for c.76% of funds, followed by Europe at c.17%, and Asia at c.6%. c.61% are "diversified", indicating a broad market allocation strategy. Sector-specific funds focus on Technology, Natural Resources, Manufacturing, and Healthcare, each ranging between 7% and 9% of the sample. Our Buyout fund sample has a mean (median) net IRR of 14.4% (13.8%) and mean (median) net TVPI of 1.3x (1.3x).

- **263 infrastructure funds** from the 2011 to 2023 vintages, with a total AuM of $650bn. Most of these infrastructure funds (60.5%) focus on North America, followed by Europe at 33% and Asia at 3%, with 42.6% classified as diversified (see charts in the appendix). Sector-focused funds include Conventional Power (24.3%), Renewable Power (16.7%), and Transport (6.1%). Private infrastructure funds have lower but consistent performance with a mean (median) net IRR of c.7% (7.1%). This infrastructure sample exhibits a mean (median) net TVPI of 1.2x (1.1x).

The average impact of fees on returns is important to interpret our results. We only consider management fees and carry, but in practice, there can be other expenses impacting the final net of fees return, and LPs can also co-invest, which would lower their effective cost. Taking the average IRR across funds in each sample we have:

$$Net\ IRR = Gross\ IRR\ - Mgmt\ Fee - Carry * (Gross\ IRR - Mgmt\ Fee - Hurdle\ Rate)$$

Using the terms for the funds in our samples and the average IRR of buyout and infrastructure funds (see table A1 in the appendix), we estimate the average impact of fees on returns to be **1.50% p.a.** for infrastructure funds and **3.34% p.a.** for private equity funds. Two things explain the large difference between the two: lower management fees in infrastructure funds combined with similar hurdle rates (almost always 8%) but much lower IRRs. Note that the fee data does not show any significant time trend hence we use a flat fee impact estimate going forward.

[1] Data from Funds AR, Pitchbook, Preqin, Capital IQ

Betting on Top Quartile

Peer group benchmarks are a gamble

Selecting a fund based purely on its quartile ranking in past performance is *akin to* gambling because investors tend to treat it as a predictive indicator. Indeed,

- **Past performance is not indicative of future results:** The standard disclaimer in nearly all investment materials. Markets are dynamic, and what drove a fund to the top quartile may not exist or could even be detrimental in the next.
- **Quartile rankings are relative and backward-looking** and only tell you how a fund performed *relative* to a group of peers in a specific *past* period. They do not assess the fund's absolute performance or its future strategy.
- **Quartile rankings ignore risk:** A fund might have landed in the top quartile by taking on excessive risk. This strategy could backfire spectacularly in different market conditions, leading to significant losses. Focusing solely on returns without considering the risk taken to achieve them is a recipe for disaster.
- **Market cycles and trends change:** Investment styles and sectors fall in and out of favour. A fund that thrived in a growth market might stumble in a value market, and vice-versa. Quartile rankings do not account for these cyclical shifts.
- **Manager and strategy changes:** A fund's success might be tied to a specific manager or strategy. If the manager leaves or the strategy is altered, past performance becomes even less relevant. Quartile rankings don't reflect these critical changes.

Moreover, quartile ranking becomes *equivalent to gambling* if fund selection is *solely* based on its quartile ranking if LPs:

- **Expect past winners to always repeat their performance**: This is a fallacy. Market conditions, fund management, and investment strategies are all subject to change.
- **Ignore the fund's investment exposure to market risk** which is crucial for understanding the source of past fund performance.
- **Chase short-term performance without a long-term perspective**: Short-term performance chasing often leads to poor decision-making.
- **Do not consider their own risk tolerance**: A high-performing, high-risk fund might be unsuitable if you have a low-risk tolerance or are investing for a short-term goal.

The odds of peer group benchmarks

When using peer group benchmarks, investors can only take one of two alternative approaches: either maximise the sample size at the expense of relevance or try to build a representative peer group at the expense of robustness.

Let’s consider both approaches with the data described above.

First, we consider all buyout funds of all types and geographies for the 2011-2016 vintages i.e. funds that are either completed or winding down and have by now returned their

investment to LPs. This yields a broad sample of 280 buyout funds, which should be robust. Table 2 shows the IRR boundaries of the sample and the corresponding 95% confidence intervals.

TABLE 2: IRR QUARTILE BOUNDARIES AND CONFIDENCE INTERVALS, 2011-2016 VINTAGES, 280 GLOBAL BUYOUT FUNDS

	IRR	95% Confidence Interval
Top quartile boundary	24.9%	[21.9%, 27.7%]
Q3/Q2 quartile boundary	14.7%	[12.0%,16.7%]
Bottom quartile boundary	3.4%	[1.8%,5.9%]

These confidence intervals are not here to decorate the table. They are *very* important: because investors observe a sample of fund data, they cannot be certain of the exact value of the quartile boundary, but they can have statistical confidence that the true 25th, 50th and 75th percentiles of the population from which the sample was drawn are within the confidence interval range.

Consider the top quartile: any fund with an IRR above 24.9%. By definition, 25% of the data in the sample are above this top quartile boundary. However, some of these observations fall within the confidence interval i.e., we cannot be sure that they are above or below the quartile limit. This is illustrated in Figure 1. Even with a large sample of 280 fund IRRs over multiple vintages, about 20% of the data cannot be classified as belonging to a specific quartile with certainty, as the quartile boundaries themselves are not known with infinite precision. Table 3 shows the proportion of observations that are classified in each quartile but also fall within the range of the quartile boundary confidence interval and could be misclassified depending on the true (and unknown) value of the quartile boundary.

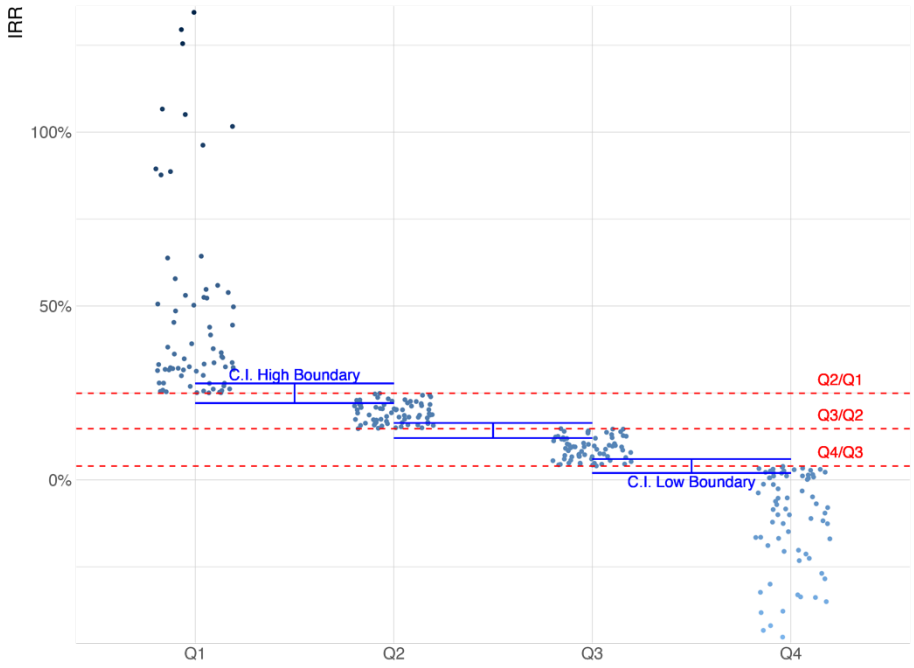
With such a large sample the betting odds (to get the fund quartile rank right) remain excellent: like Manchester City vs. a lower division team or the Boston Celtics (when they are on a hot streak) playing at home against a bottom-ranked team. Still, it is a gamble to consider 20% of the best ranked funds as top quartile when they may not be. Even great teams can lose home games.

The problem is that **this broad peer group is not very useful**: it includes all buyout funds in all sectors and geographies across multiple vintages. This is not relevant enough and, while statistically robust, unlikely to yield predictive information about the performance of the single US Tech fund investors want to benchmark.

TABLE 3: IRR QUARTILE CONFIDENCE INTERVAL – 2011-2016 VINTAGES, 280 GLOBAL BUYOUTS FUNDS

	Observations within the boundary confidence interval	Observations outside of the boundary confidence interval	Betting odds of getting the quartile right
Top quartile data	20%	80%	1:4
Second quartile data	25.7%	74.3%	1:2.9
Third quartile data	20%	80%	1:4
Fourth quartile data	20%	80%	1:4

FIGURE 1: IRR DISTRIBUTION BY QUARTILE AND QUARTILE CONFIDENCE INTERVALS – 2011-2016 VINTAGES, 280 GLOBAL BUYOUTS FUNDS



Next, we consider a narrower and much more relevant set of peers for the same 2013 US Buyout Tech Fund and restrict the sample to the relevant sector (Tech) and vintages (2012-2016). This yields a peer group of 19 funds. This much smaller sample should feel much more familiar to investors trying to use peer groups to benchmark their fund investments.

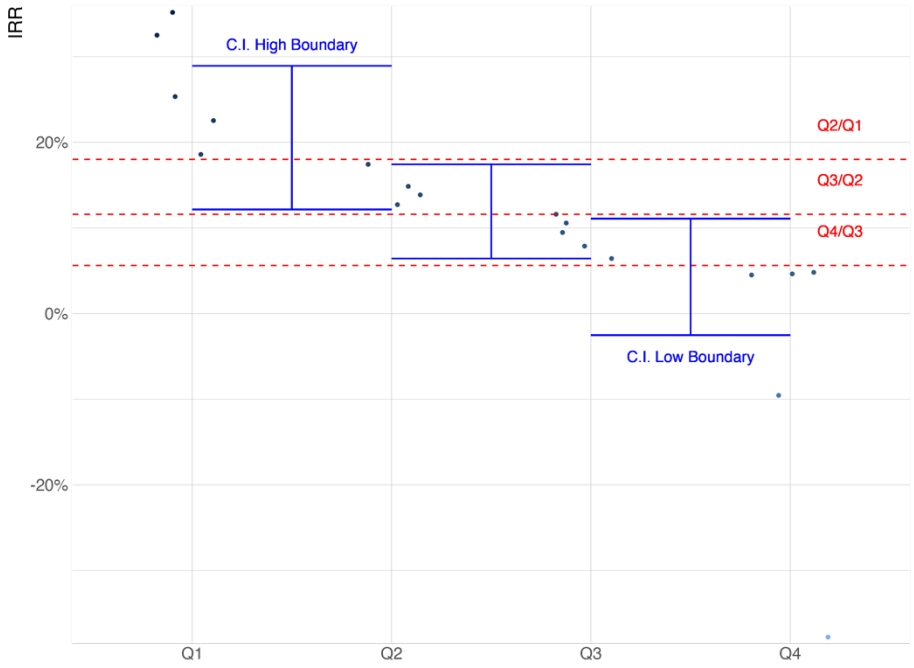
The gain in relevance of the peer group is so costly in terms of robustness that it turns the entire benchmarking exercise into **a very aggressive gamble**. Table 4 shows the proportion of the data that is found to be within the quartile boundary confidence interval, and that which can be safely considered outside of these limits. At 3:2 chances of picking a true top quartile fund, it is you who are playing the Boston Celtics on their home turf now!

Figure 2 confirms how unlikely investors are to get it right with 19 datapoints: the confidence intervals of the quartile boundaries are now so large that almost all the data sits within them. Consultants may tell you that 19 datapoints is a "robust, representative set of peers" – and it may seem so to investors inside the cave, looking at reflections of reality. In the real world, it is completely meaningless.

TABLE 4: IRR QUARTILE CONFIDENCE INTERVAL – 2012-2016 VINTAGES, 19 TECH BUYOUTS FUNDS

	Observations within the boundary confidence interval	Observations outside of the boundary confidence interval	Betting odds of getting the quartile right
Top quartile data	60%	40%	3:2
Second quartile data	100%	0%	N/A
Third quartile data	80%	20%	4:1
Fourth quartile data	60%	40%	3:2

FIGURE 2: IRR DISTRIBUTION BY QUARTILE AND QUARTILE CONFIDENCE INTERVALS – 2012-2015 VINTAGES, 19 TECH BUYOUTS FUNDS



Thus, **LPs choosing fund managers based on peer groups really are gamblers**: depending on the quality of the peer group data, they take significant risk of misclassifying funds as top quartile when they are not. The more specific the peer group, the less data, the larger the chance of making the wrong call.

Conversely, much larger datasets allow less reckless – but still uncertain – decisions to be made when it comes to fund manager ranking. However, such decisions remain ill-informed because a very large peer group is… not a peer group anymore.

Leaving the Cavern: Market Equivalents

The idea of using a market benchmark to assess the performance of funds is a powerful improvement to peer grouping, which is almost always statistically weak. Using a market equivalent or benchmark to assess fund performance is the equivalent of leaving Plato's cave and staring at the real world of investing.

A market index is a Portfolio. As such, it removes the two sources of illusion investors suffer from when looking at peer groups:

- **A market index shows the risk and performance of the market** for underlying assets and can therefore be used to distinguish the impact of the market on fund performance (which sectors or factors performed well to begin with) with that of managers and their own choices and value-add.
- A market index relies on a construction methodology to create a weighted average of a representative set of assets trading in the market of interest. Such a portfolio of

assets is **almost always more robust than a peer group dataset** built from *ad hoc* data contributed to a database by a changing cast of managers.

As usual, a market benchmark should be unambiguous, measurable, relevant, reflective of current investment options and specified in advance. However, it must be noted that when it comes to benchmarking private markets, whether or not the benchmark is *investable* is not that relevant. In principle any asset in the benchmark *could be* purchased by an investor in order to qualify as a private asset. But the logic of market equivalent is not to be a cheap alternative to active management. It is to provide a counterfactual to individual funds: how would a typical investor in the average fund have performed under current market conditions? Only then can LPs determine how *their* fund investments have performed.

From Ranking Quartiles to Ranking Alpha

A simple way to the use a market benchmark to decompose the performance of private funds is the Direct Alpha approach of Gredil et al. (2021) by which a fund IRR can be written as:

$$Fund\ IRR = Market\ Return + Total\ Fund\ Alpha$$

The Direct Alpha calculations are described in the appendix.

Next, the alpha of each manager can be broken down into multiple sources. Fund managers generate alpha through a combination of strategic decision-making and execution capabilities. Broadly, these efforts fall into three categories: asset allocation, asset selection, and structuration. Asset allocation involves making strategic bets on different market segments, such as sector and geographic focus. Asset selection involves choosing specific investments and determining the optimal timing for distributions, aiming to maximise returns. Lastly, structuration includes adjusting leverage or reducing market risk through mechanisms such as preferential exit strategies, which can enhance returns while managing exposure.

We extend this approach to distinguish between sources of alpha. Using a broad market benchmark to measure Total Fund Alpha in combination with a strategy-specific benchmark e.g. mid-market US Tech, to control for the impact of Asset Allocation decisions, it is straightforward to split Total Fund Alpha into two components: Asset Allocation Alpha and Pure Alpha.

The difference between Total Fund Alpha and Pure Alpha is the Allocation Alpha,

$$Allocation\ Alpha = \text{ Total Fund Alpha } - \text{Pure Alpha}$$

The total fund net IRR is written:

$$Fund\ net\ IRR = Market\ Return + Asset\ Allocation\ Alpha + Pure\ Alpha - Fees$$

Or

$$Fund\ net\ IRR = Market\ Return + Asset\ Allocation\ Alpha + Net\ Pure\ Alpha$$

Asset Allocation Alpha represents the portion of returns attributable to the fund manager's choice of market segment or style exposures (sectoral, geographic or factor tilts). Net Pure Alpha isolates the value added by the manager's investment selection and structuring skills, which includes timing of distributions, leverage decisions, and exit strategies, after fees. This shows how fund managers create value and enables investors to assess which proportion of market outperformance stems from specific strategic decisions or operational and investment expertise.

How Equivalent is the Public Market?

Market equivalents are not new and since Kaplan and Schoar's 2005 paper,[2] Public Market Equivalents or PMEs have become a frequent alternative to peer groups and are reported by most data providers.

Unfortunately, a public market equivalent does not answer the question of what drives private fund managers' performance. A public equity index may be unambiguous, measurable, reflective of current investment options and specified in advance, but it is **not** the relevant benchmark.

Figure 3 shows the distribution of net Total Fund Alpha of our buyout fund sample when benchmarked against the Russell 2000 index. On average, 61% of buyout funds exhibit a positive net alpha, with a median of 5.27%. Adding our average fee estimate that is an average gross alpha of c.8.6%!

This comparison with public markets can be useful to understand the potential upside of investing in private market funds over a passive public market strategy. But this is an average: 39% of buyout funds exhibit negative net Total Fund Alpha against the Russell 2000. If anything, the PME confirms that it remains essential to pick the better fund managers since picking the less good ones could mean underperforming listed equity!

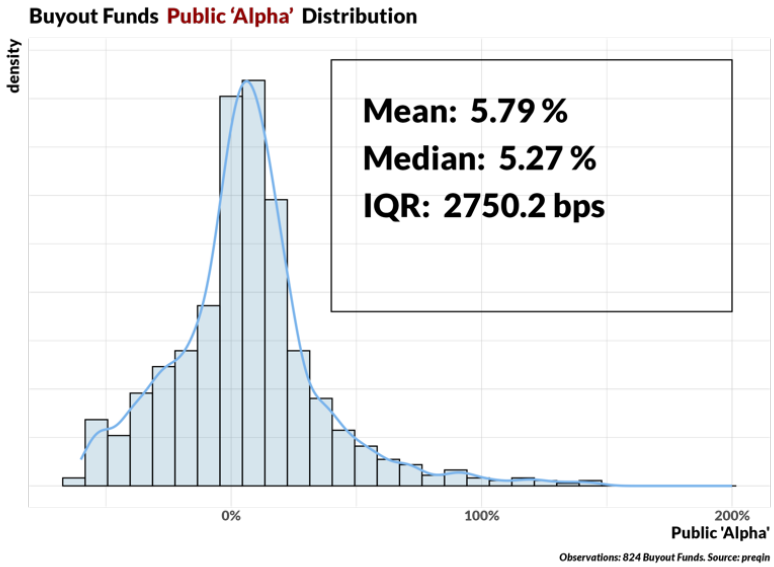
But it does not provide a basis for selecting them. The PME does not provide information about the risks taken by the fund manager and whether returns come from the fund's exposure to the private assets market (beta) or the manager's alpha.

With a PME, our investors who have just left the cavern and its peer grouping shadow play, are still none the wiser about which manager to select.

If they select a manager randomly in our buyout fund sample, they face 1.56:1 odds of underperforming a Russell 2000 ETF...

[2] Kaplan, S.N. and Schoar, A. (2005), Private Equity Performance: Returns, Persistence, and Capital Flows. Journal of Finance, 60: 1791-1823. https://doi.org/10.1111/j.1540-6261.2005.00780.x

FIGURE 3: PUBLIC MARKET EQUIVALENT DIRECT ALPHA WITH RUSSELL (2000) INDEX AS A BENCHMARK.



Private Market Equivalents (PtME)

A genuine improvement for investors in private equities consists of using benchmarks that truly represent the market in which they invest and can therefore be used to distinguish between the impact on fund performance of market movements and the fund's exposure to them (beta) from the decisions made by managers to create (or destroy) value relative to market returns (alpha).

We call this approach the private market equivalent or PtME.

Indices of choice

We use the privateMetrics indices and benchmarks because they are specifically designed to capture changes in market conditions. privateMetrics indices are calculated benchmarks and focus solely on the aggregate price movements of private assets, this not reflecting the performance of individual managers at all.

The two market indices we use are the private2000® and infra300® indices. Both are registered with the European Securities and Market Authority (ESMA) as market benchmarks, indicating that they follow rigorous index construction standards and governance and comply with IOSCO guidelines. Updated monthly and using a fixed list of constituents which is managed by a dedicated Index Committee, these indices reflect market dynamics accurately and consistently (see Table 5 for details).

infraMetrics also allows custom benchmarks reflecting the strategy of a fund to be built e.g., combining two sectors with specific weights across a specific region. Such benchmarks will be used to capture the strategy of the funds and distinguish between asset allocation and pure alpha.

To find out more about privateMetrics indices, download our factsheet here.

TABLE 5: SUMMARY DESCRIPTION OF THE PRIVATE2000 AND INFRA300 MARKET INDICES

	Constituents	privateMetrics Universe	Market Cap	10-y Return	Sharpe
private2000®	2000 in 30 countries	Private Equities (1M, in 150 countries)	USD2.1T	15%	0.70
infra300®	300 in 20 countries	Private Infrastructure (9,000 in 25 countries)	USD323bn	8.6%	0.72

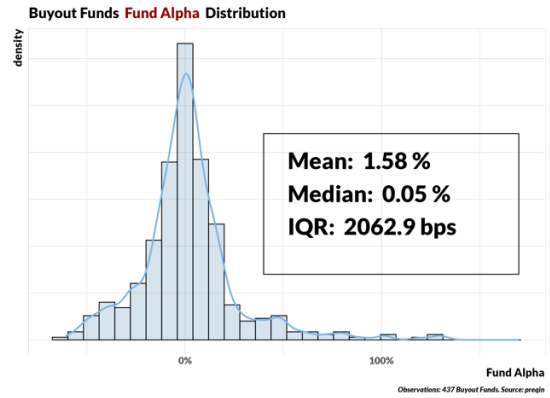
Only half the funds should beat the average

We use the private2000 index to compute a PtME for our sample of buyout funds using the approach described above. Suddenly the results make sense: Figure 4 shows that the median alpha is 0.05% i.e., not significantly different from zero! Moreover, as shown in Figure 4b, market returns explain the bulk of buyout fund returns or c14.4% p.a.

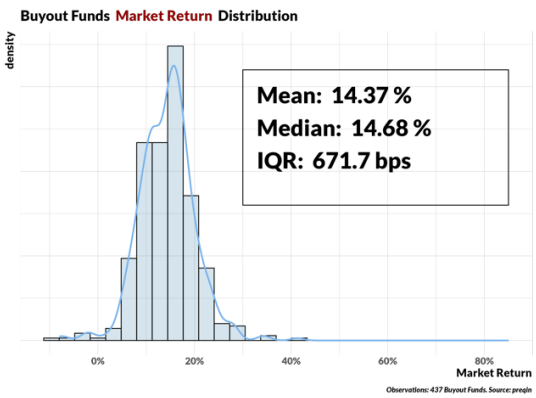
Eureka! might say the LPs, finally freed from the distortion and illusions of peer groups and public market equivalent. Indeed, since a market index is by design the weighted average of the market performance, it only makes sense that roughly half the population of funds should manage to beat this average, and that roughly half the same population of funds should underperform the average. After all, it is a tautology that the private market equities should be the source of (most of) the returns received by investors in the… private equities market. Of course, numerous fund managers (about half the population) generate higher returns than the market. But they do so by taking market risk in the first place.

Similarly, for a PtME for infrastructure funds using the infra300 index as the market benchmark, the median alpha is -0.29% (Figure 5a), and on average, most of the return of infrastructure funds comes from market returns (around 7% pa, Figure 5b).

FIGURE 4: PRIVATE EQUITY FUNDS PRIVATE MARKET EQUIVALENT AND MARKET RETURN (PRIVATE2000).

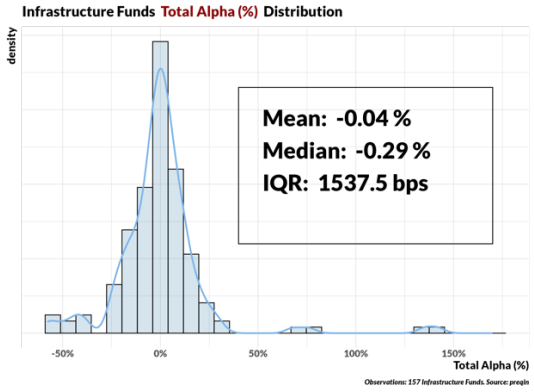


(a)

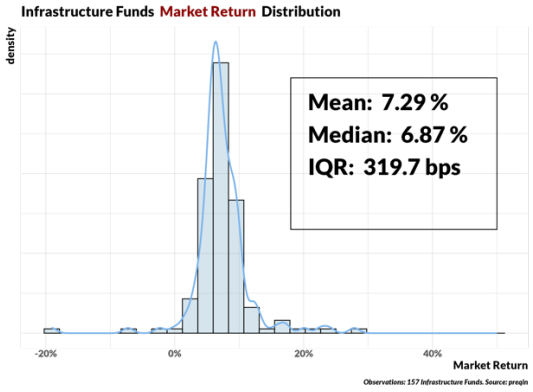


(b)

FIGURE 5: INFRASTRUCTURE FUNDS PRIVATE MARKET EQUIVALENT AND MARKET RETURN (INFRA300).



(a)



(b)

To summarise:

- **On average, we find zero alpha in private asset funds** when benchmarked against a private market index! This is expected since the market index represents the average performance of the market and, therefore, half of the population is below/above the average.
- **Market performance (market risk) is the main driver of fund performance**. This is also expected. If a market exists, then investing in and out of this market should be a major explanatory factor of any individual investment strategy.
- This result also confirms that the private2000 and infra300 indices are the correct market benchmark for private equities and infrastructure respectively.

Breaking down fund alpha

As described above, investors can also use a second index that reflects the fund's strategy to derive the fund's alpha "controlling for strategy" that is, what we have called "Pure Alpha." For each fund in the sample, we build a custom benchmark reflecting the geography and sector focus of the fund. The Asset Allocation alpha is then the difference between the Total Fund Alpha derived against the broad market index, and the Pure Alpha derived against the strategy-adjusted benchmark.

For buyout funds the average Asset Allocation Alpha is 3.92%, indicating that fund managers generate value over and above the market by making sector specific bets. This value add is completely offset on average by an average Net Pure Alpha of -4.04%.

Hence, while buyout fund managers generate most of their performance through their exposure to market risk, they also create alpha by making long-term sector and geography bets. We estimated average fees in buyout funds to be c3.4%. Adding this back to net Pure Alpha suggests an average pure Alpha of -0.64%.

In this sample of 800+ buyout funds, the average manager does not produce any Alpha. However, the interquartile range (IQR) of net Pure Alpha is 2,069bps, indicating a very wide dispersion. This implies that while on aggregate pure alpha is close to zero, many fund managers are still able to pick and structure superior investments and generate Alpha.

Like buyout funds, infrastructure funds in our sample exhibit a median Asset Allocation Alpha of 6.3%, indicating that infrastructure fund managers also primarily generate value by choosing sector tilts. The median net Pure Alpha stands at -6.26% and at -4.76% before fees (see Table 6).

TABLE 6: SOURCES OF ALPHA IN BUYOUT AND INFRASTRUCTURE FUNDS.

	Alpha Source	Mean	Median	IQR
Buyouts	Asset Allocation Alpha	3.82%	3.92%	639bps
	Net Pure Alpha	-2.54%	-4.04%	2069bps
	Pure Alpha (assuming fees of 3.4%pa)	0.86%	-0.64%	N/A
Infrastructure	Asset Allocation Alpha	6.22%	6.7%	902bps
	Net Pure Alpha	-6.26%	-5.97%	1333bps
	Pure Alpha (assuming fees of 1.5%pa)	-4.76%	-4.47%	N/A

Again, the average infrastructure fund manager generates returns through broad market exposure and selecting sectors that they expect to outperform the broad market e.g. Data infrastructure and Renewables. But this is partly offset by negative Pure Alpha both before and after fees.

This can be interpreted as partly driven by the nature of infrastructure companies, many of which are akin to a fully amortising bond with risky cash flows. With immobile assets, high fixed costs and high operating leverage, operational improvements are necessarily limited (you do not “turn around” a toll road. It has either been built in the right place and attracts traffic, or not). Perhaps picking infrastructure companies is more unforgiving than in the more diverse private equities market (see for example on the Thames Water debacle, Blanc-Brude, Gupta & Whittaker, 2024[3])

The real world of private asset investing

Leaving the cavern means choosing to see private markets and private asset funds for what they really are. Escaping the illusion that they have been living in, investors realise that:

Private assets trade in a market like any other financial security, and private asset funds trade in and out of this market, like any other active equity manager. In other words, private assets do not begin or end with private fund managers, nor are private assets fund benchmarks an accurate representation of a much larger and active market for private assets. In fact, private fund managers only hold a fraction of the market for private assets.

Private markets are risky, as in any other market for financial assets, market prices change continuously as a result of supply and demand, macro-economic conditions and investor preferences. High returns are available, especially when trades are executed by the most skilled managers but typically involve a significant amount of market and idiosyncratic risk. Private companies are exposed to economic risks, they can default or go bankrupt and, as with any equity investments, equity owners can lose everything.

[3] Blanc-Brude, F., Gupta, A. & Whittaker, T. (2024). Low Tide: Benchmarking Risks in Infrastructure Investments: What the data showed about Thames Water. EDHEC Infrastructure & Private Assets - link

Private asset beta matters. Private investment performance results from: A/ exposure to private market risk (beta) and B/ investment selection, management and timing (alpha). This is the unescapable reality of any financial market. Fund managers can generate alpha in numerous ways by selecting, improving and structuring specific investments, but it remains that alpha typically comes with taking significant market risk.

Only some private fund managers outperform the market (about half the time). It is difficult to beat any market. We find strong evidence that some private fund managers generate high alpha, but only half of them generate positive alpha and on average (across all managers) private fund alpha is close to zero.

(average) Fees offset most of the (average) alpha. Any alpha that managers can generate on average is offset by the fees they charge for their service.

These findings are very close to well-established research results about active equity managers in public markets.[4] This is normal. Private equities are also a market, albeit with different dynamics, buyers and sellers than public equities. Leaving the cave does not mean giving up on investing in private markets, on the contrary. It means investing with eyes open and therefore in line with an investor's fiduciary responsibility. Using a private market benchmark, investors can select the best managers, managers can truly showcase their skills, and plan members can fully receive the benefits of investing in private markets.

PrivateMetrics allow alpha in private markets to be measured, addressing a challenge that has historically made performance evaluation difficult. By focusing on market prices rather than manager-reported data, market indices eliminate biases found in peer group approaches. A robust asset pricing methodology and monthly updates ensure an accurate and consistent reflection of market conditions. The ability to customise benchmarks by geography, sector and factor tilts makes privateMetrics a practical and versatile solution for evaluating performance across diverse investment strategies.

[4] See amongst others Jensen (1968) *The Performance of Mutual Funds in the Period 1945–1964."* Journal of Finance, 23(2), 389–416 or Fama & French (2010) *"Luck versus Skill in the Cross-Section of Mutual Fund Returns.* Journal of Finance, 65(5), 1915–1947.

Appendix

Dataset Details

Buyouts

FIGURE A1: PRIVATE EQUITY FUND SAMPLE BY REGION, SECTOR, AND VINTAGE

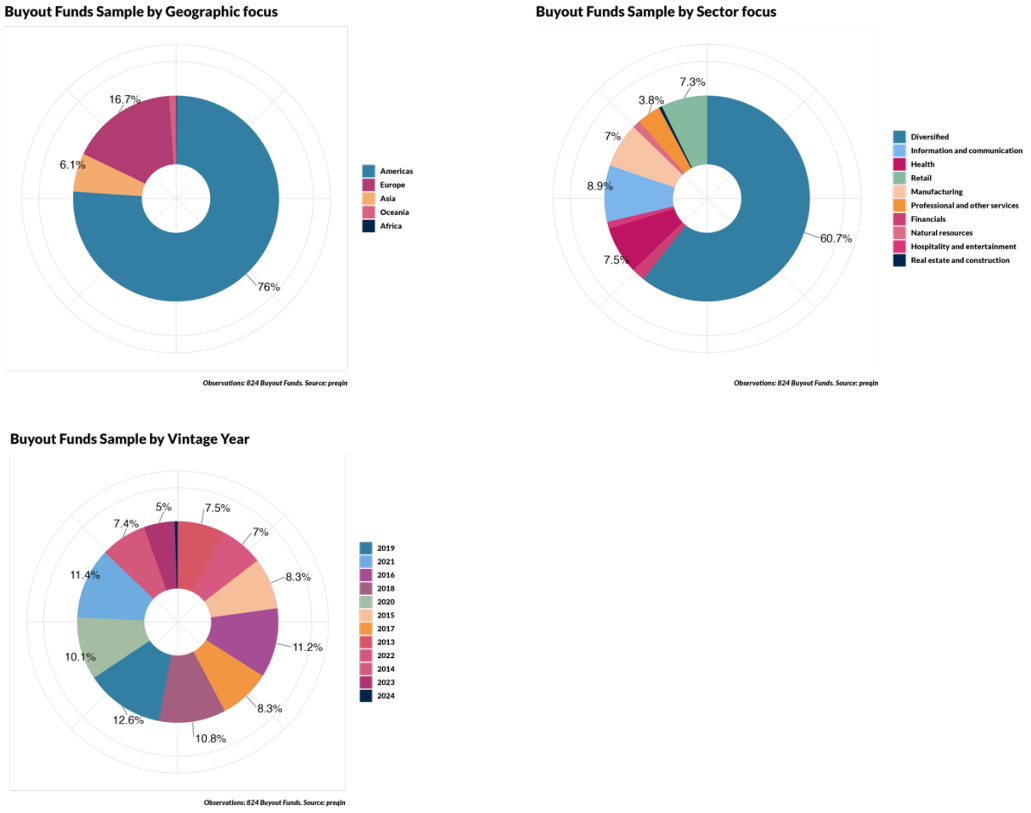
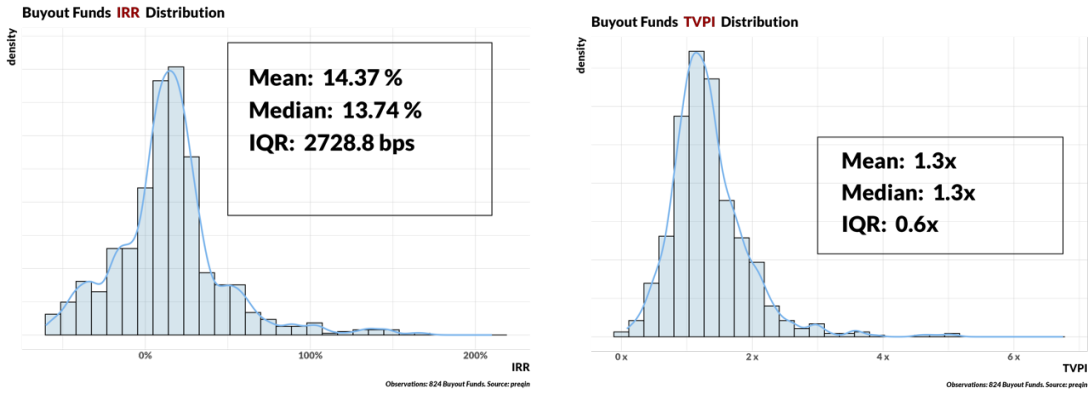
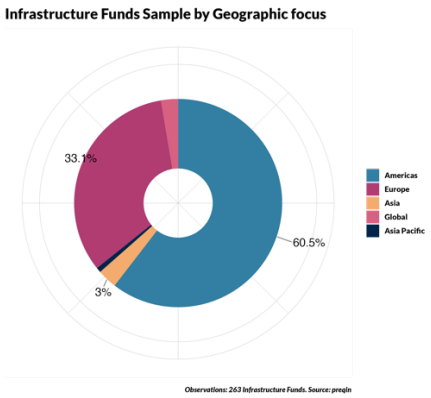


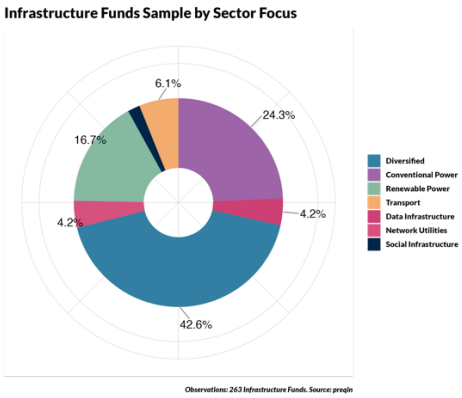
FIGURE A2: PRIVATE EQUITY FUND PERFORMANCE DISTRIBUTION



Infrastructure

FIGURE A3: PRIVATE INFRASTRUCTURE FUNDS SAMPLE BY REGION, SECTOR, AND VINTAGE





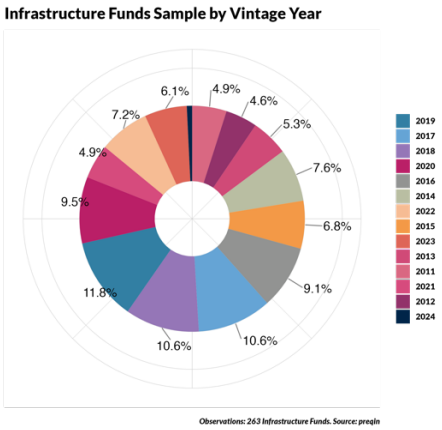
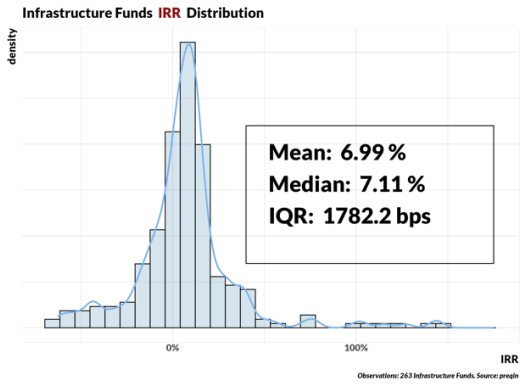
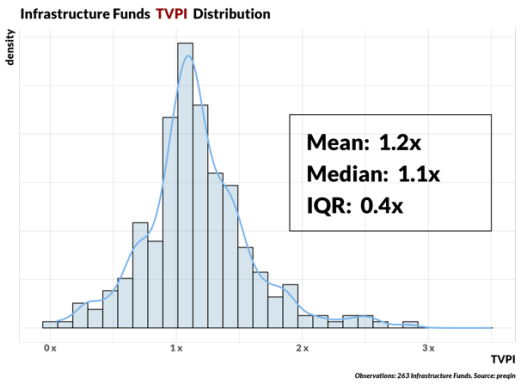


FIGURE A4: PRIVATE INFRASTRUCTURE FUND PERFORMANCE DISTRIBUTION





Fund Fees

TABLE A1: AVERAGE FEE TERMS IN PRIVATE EQUITY AND INFRASTRUCTURE FUNDS

Average Fee	Private Equity	Infrastructure
Management fee	1.90%	1.68%
Carry	20%	18%
Hurdle	8%	8%

Source: fund terms

Calculating Alpha with privateMetrics

Approach

Compound the fund cash flows by the return of the private market index from the date of the cash flow to the calculation date. Then calculate the internal rate of return of the adjusted cash flows, which is the *Private Market Equivalent*

Inputs required: Fund's historical cash flows and NAV, Private Market Index

Step 1: Adjust the cash flows

$$\tilde{C}_t = C_t . \frac{V_b(T)}{V_b(t)}$$

C_t: Cash flow at time t (positive for distributions, negative for contributions)

$V_b(T)$: Value of the private market index on the calculation date T

$V_b(t)$: Value of the private market index at the initial time t

$\tilde{C}_t$: represents the adjusted fund cash flow

Step 2: Solve for the rate α equation linking the adjusted cash flows and the residual value:

$$\sum_{t=0}^{T} \frac{\tilde{C}_t}{(1+\alpha)^t} + \frac{NAV}{(1+\alpha)^T} = 0$$

α is the Direct Alpha rate (analogous to IRR)

A *Private Market Equivalent* greater/lower than 0 indicates that the fund has outperformed or underperformed the private market index.

We have made it easy to calculate alpha of a private equity or Infrastructure fund using the privateMetrics API and a pre-defined excel template. It involves three simple steps:

1. **Select the relevant broad market and strategy benchmarks**
   Given a private fund, select a corresponding privateMetrics broad market index, for example the private2000 index for global private equities and a strategy index corresponding to the fund's style e.g., US Tech Mid-Cap.
2. **Get the fund data needed to compute Direct Alpha**
   For the same fund, all historical cash flow and NAV data are required to apply the Direct Alpha methodology.
3. **Find Total Alpha, Style Alpha and Pure Alpha for the fund**
   Using the two privateMetrics benchmarks selected above and the fund cash flow and NAV data, it is possible to compute Total Fund Alpha (relative to the Broad Market, Pure Alpha (relative to the Style Benchmark) and Style or Asset Allocation Alpha (the difference between Total and Pure Alpha)

Refer to this use case for more details.

The privateMetrics® Valuation Model

Our approach to the valuation of private companies is designed to maximise the available transaction and financial data in private markets and provide a standardised and systematic manner to update prices with every observed transaction.

First, we construct a multi-factor model of prices using a sample of observed transactions over time which can infer the unbiased and precise factor prices that investors pay for different characteristics of a private asset. Although every transaction is idiosyncratic or unique, in a large sample of transactions, the individual errors in each transaction price can be diversified away to discern the price attributable to each factor. Factor prices refer to the premium (or discount) that an investor is willing to pay to seek exposure to a specific factor of return in private companies. For example, observing the relationship between size and valuation among reported transactions, it can be inferred how much premium or discount an investor is willing to pay for purchasing a larger private company.

Second, an important and key application of this approach is that, with the estimated factor prices, say for size, it would then be possible to price unlisted private companies whose size information is available, irrespective of whether they are traded or not. This approach provides a more robust estimate for FV and enables the creation of representative indices of private companies.

Our approach's novelty is calibrating the model to newly observed transactions obtaining the factor price evolution over time, which allows us to update the valuation for all tracked unlisted private companies.

Common risk factors

If investors trade unlisted private companies from each other in mutually negotiated transactions, there must be some common characteristics that at least partially explain prices. For example, private companies that have higher profits or growth opportunities may be more valuable to investors than those that are not.

To arrive at a potential list of factors, we follow simple criteria that there needs to be an economic rationale for the factor to affect valuation. The factor should also be statistically related to the valuation. Moreover, the factor should also be objectively observable or measurable. With a potential list of factors, our factor selection is the result of a statistical approach, where the factors that can satisfactorily explain the variation in observed transaction valuations are included in the final model while trading off being parsimonious with being able to explain a higher variance in valuation. The privateMetrics asset pricing model uses five key risk factors as below:

- **Size**: Larger companies may be more complex, have higher transaction costs, and be less liquid, all of which can make them trade at a lower valuation per $ of revenue.
- **Growth**: As traditional PE strategies rely on growing the entry multiple, that may involve both increasing its top and bottom lines, i.e., revenue and profits. Thus, companies that can grow faster can be more sought after, making them more valuable.

- **Leverage**: Leverage can make a company riskier as it increases the risk of default. However, there is also a signaling effect of leverage, as companies with stable consistent cash flows can support a higher leverage, and vice versa. Thus, leverage is expected to influence the valuation of a company.
- **Profits**: More profitable companies have more predictable (less risky) future payouts and hence attract a lower risk premium, making them more valuable.
- **Maturity**: Younger companies have fewer track records and face higher information uncertainty. Studies have shown that firms with high uncertainty tend to be overvalued and earn lower future returns. Thus, the maturity negatively affects valuation.
- **Country risk**: Investors may require a high return when investing in a high-risk country, thus depressing the current valuation. In other words, in countries with lower risk, investors may be willing to purchase assets at a higher valuation as government policies may be more predictable with lower macroeconomic risks.

TABLE 1: KEY FACTORS, THEIR EFFECT ON VALUATION, & THE ECONOMIC RATIONALE FOR INCLUDING THEM IN THE MODEL

Factor	Definition (Proxy)	Effect on price	Economic Rationale	References
Size	Revenues	Negative	Larger firms are more illiquid and trade a lower price	Fama & French (1993)
Growth	Change in Revenues	Positive	Companies with higher revenue growth trade at a higher price	Fama & French (1992), Petkova & Zhang (2005)
Leverage	Total debt / Revenues	Positive	Companies that can borrow more have a lower cost of capital and a higher value	Gomes & Schmid (2010), George & Hwang (2010)
Profits	Ebitda Margin	Positive	Companies that have higher profits have a higher value	Novy-Marx (2013), Hou et al. (2015)
Maturity	Years since incorporation	Negative	Companies that are mature exhibit less growth potential and trade a at a lower price	Jiang et al. (2005)
Country Risk	Term Spread	Negative	Companies in high-risk countries face more uncertain prospects	Chen & Tsang (2013)

SOURCE: CALCULATED USING OVER 10K DEALS FROM PITCHBOOK, CAPITALIQ, FACTSET, AND OTHER PRIMARY SOURCES BETWEEN 1999-2022

Our factors have been documented in prior academic studies to be associated with valuation. We also include factors that have been identified as key determinants of valuation from a survey of private equity practitioners that we conducted in 2023. Table 1 summarises the key factors that we use in the model, how they are measured, each factor's effect we document in the data on average, the economic rationale for their inclusion, and citations for the work that underpins their inclusion.

Model set up

The privateMetrics asset pricing model uses the Price-to-Sales ratio of observable transactions (the entry price multiple) as the modelled variable. The model is estimated as the linear sum of the product of factor exposures and factor prices. The estimation can then separate the systematic part of the valuation while leaving out "noise" in each valuation.

$$\frac{P}{S} = a + \sum_{k=2}^{K} b_k l_k + e$$

Following standard asset pricing notation, the factor exposure or factor loading is called a beta (β), and the factor premium is called a lambda (l) for the k factors in the model. a is the intercept and e is the noise or idiosyncratic part of the valuation.

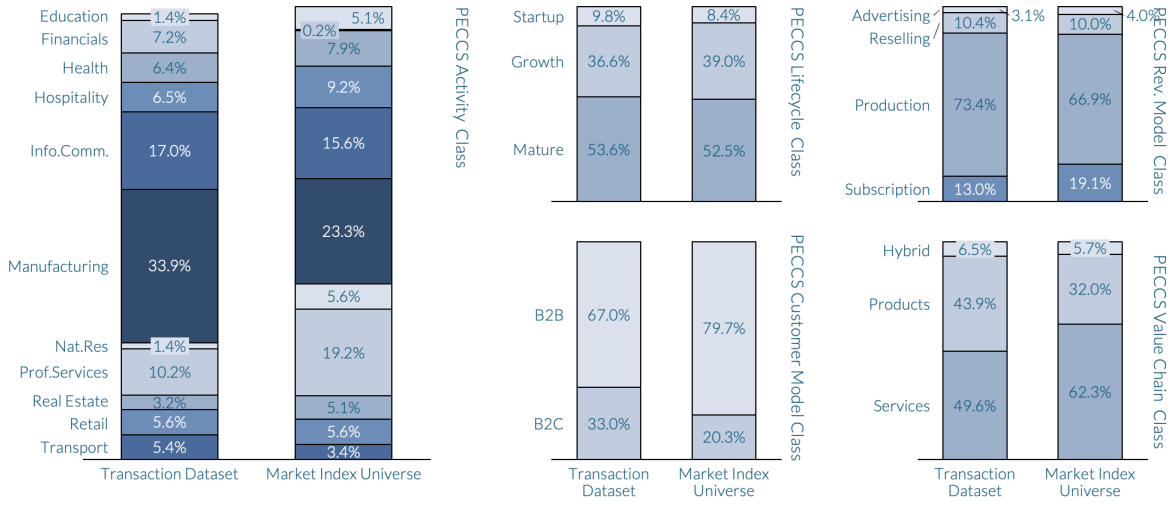
Model calibration

The privateMetrics model uses a carefully curated dataset of more than 10k+ unlisted private company investments going back two decades sourced from a wide variety of datasets including PitchBook, Factset, Capital IQ, fund manager reports, and other publicly available data sources.

We calibrate this model using new observations monthly to update its estimation of the price of risk of each factor. In other words, each transaction observed is then used to 'update' this model (i.e., obtain new ls) through a dynamic estimation (using a Kalman filter), which retains the memory of past ls while also allowing the new transaction to influence the relationship while keeping the average e close to zero. More details on the implementation of the model are available in our online documentation and Selvam and Whittaker (2024). The dataset covers all key segments of the market as shown in Figure 1.

A good application of using the model to value unlisted private companies is to create a representative marked-to-market index of private companies that are regularly valued. The privateMetrics index universe in Figure 1 includes the constituents of the private2000® index constructed by Scientific Infra and Private Assets, which is developed on this shadow pricing idea and captures the performance of private companies in 30 countries globally that are important for private equity investors (read more about the index here).

FIGURE 1: PRIVATEMETRICS TRANSACTION DATASET COMPARED TO THE PRIVATEMETRICS INDEX UNIVERSE BY PECCS PILLAR & CLASS



How precise are the predictions across PECCS® pillars?

To examine how closely the predicted valuations track the raw modelled valuations in transactions, we compute the average estimation errors of the full sample, and also by classes within each PECCS® pillar. What stands out is that although the model by design is expected to have lower estimation errors in the full sample, the within PECCS® class estimation errors are also very small. All the errors are within ±10%, reassuring that the

model predictions on average even within each segment of PECCS® are reasonable. The errors are summarised in Table 5.

The most commonly used metric of valuation in private markets is EV/EBITDA as PE owners have the flexibility to alter the capital structure of their holding company and hence are more interested in operational profitability without factoring interest costs. However, our model is based on P/S because P/S is statistically better, stable, and not affected by loss-making companies. Thus, one may be concerned whether our predictions for EV/EBITDA might be biased.

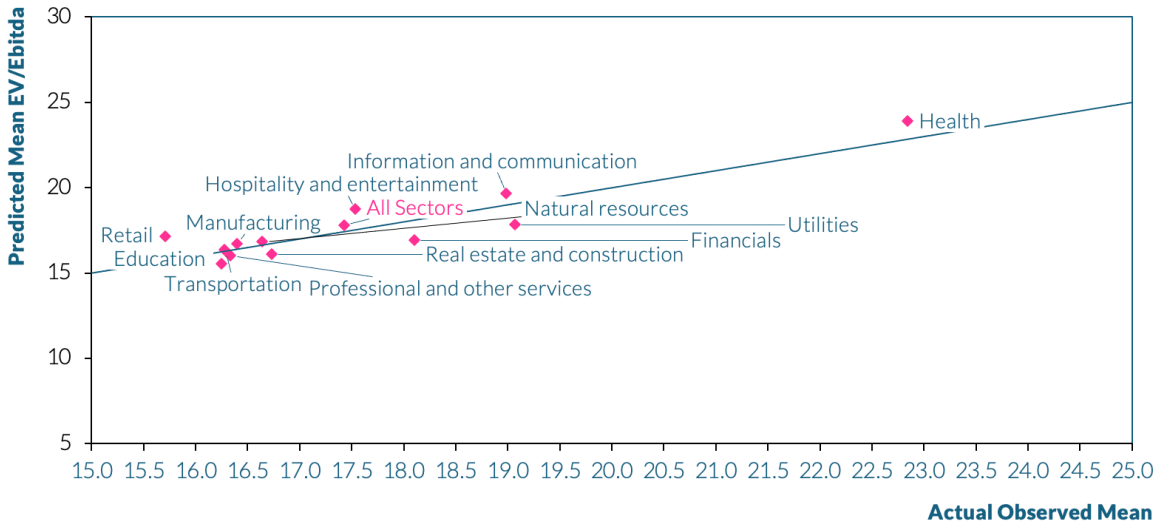
To ensure that is not the case, we compute the EV based on the book value of debt and predicted equity valuation and divide the sum by the EBITDA to get a predicted EV/EBITDA and compare it to transaction implied ratios. Figure 3 presents the average predicted and observed EV/EBITDA by PECCS® activity classes. We find that the predictions are very close to the observed values, thus mitigating this concern.

TABLE 5: AVERAGE ESTIMATION ERRORS ACROSS PECCS® CLASSES, BASED ON THE DIFFERENCE BETWEEN TRANSACTED VALUATIONS AND FACTOR MODEL PREDICTIONS

PECCS Pillar	PECCS Class	Mean Estimation Error	PECCS Class	Mean Estimation Error	PECCS Pillar
PECCS Activity	Education and public	0.9%	Startup	0.1%	PECCS Lifecycle Phase
	Financials	1.8%	Growth	-1.7%	
	Health	2.6%	Mature	2.8%	
	Hospitality and entertainment	-1.1%	Advertising	1.2%	PECCS Revenue Model
	Information and communication	-4.4%	Reselling	4.6%	
	Manufacturing	2.5%	Production	2.9%	
	Natural resources	9.4%	Subscription	-6.9%	
	Professional and other services	3.3%	B2B	1.5%	PECCS Customer Model
	Real estate and construction	1.9%	B2C	0.9%	
	Retail	0.5%	Hybrid	0.6%	PECCS Value Chain
	Transportation	7.2%	Products	1.1%	
Full Sample		**1.1%**	Services	3.4%	

SOURCE: CALCULATED USING OVER 10K DEALS FROM PITCHBOOK, CAPITALIQ, FACTSET, AND OTHER SOURCES BETWEEN 1999-2022

FIGURE 3: PREDICTED VERSUS ACTUAL EV/EBITDA RATIOS BY PECCS® ACTIVITY CLASSES



SOURCE: CALCULATED USING OVER 10K DEALS FROM PITCHBOOK, CAPITALIQ, FACTSET, AND OTHER SOURCES BETWEEN 1999-2022

About Scientific Infra & Private Assets

Our products come from the cutting-edge R&D of the EDHEC Infrastructure & Private Assets Research Institute, established in 2016 by EDHEC Business School. In 2019, we transformed this academic research into a commercial enterprise, providing services like private market indices, benchmarks, valuation analytics, and climate risk metrics. We take pride in our unique dual identity, bridging scientific research and market applications.

The EDHEC Infrastructure & Private Assets Research Institute (EIPA) continues to advance academic research and innovate with technologies in risk measurement and valuation in private markets, especially utilising artificial intelligence and language processing. Our company, Scientific Infra & Private Assets (SIPA), supplies specialised data to investors in infrastructure and private equity.

Merging academic rigor with practical business applications, our dedicated team excels in integrating quantitative research into private asset investing. Our products, infraMetrics® and privateMetrics®, are unique in the market, stemming from thorough research rather than being ancillary services of larger data providers. We are the Quants of Private Markets, leading with innovation and precision.

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